


		2	Document ID	Issue Date	Title
1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020122932 A1	20020905	POLYESTER FILM WITH SURFACE TOPOGRAPHY MATCHED TO THE INTENDED USE, THE USE OF THE FILM AND PROCESS FOR ITS PRODUCTION
2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	US 20020090498 A1	20020711	Transparent polyester film having a high oxygen barrier and process for its production

	1	2	Document ID	Issue Date	Titl
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020039646 A1	20020404	Biaxially oriented polyester film having a high oxygen barrier and process for its production
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 20020037418 A1	20020328	Transparent polyester film having at least three layers and process for its production

		2	Document ID	Issue Date	Title
5	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	US 6428882 B1	20020806	Biaxially oriented polyester film with high oxygen barrier, its use, and process for its production
6	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 6391410 B1	20020521	Use of a transparent polyester film as a gas/flavor barrier film

	1	2	Document ID	Issue Date	Title
7	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 6149995 A	20001121	Transparent polyester film with high oxygen barrier, its use and process for its production

		2	Document ID	Issue Date	Title
8	<input checked="" type="checkbox"/>	<input type="checkbox"/>	US 6054212 A	20000425	Transparent polyester film with high oxygen barrier, its use, and process for its production

		2	Document ID	Issue Date	Title
9	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	US 5955181 A	19990921	Heat-sealable polyester film
10	<input type="checkbox"/>	<input type="checkbox"/>	US 20020160215 A1	20021031	High-whiteness, biaxially oriented polyester film, its use and process for its production
11	<input type="checkbox"/>	<input type="checkbox"/>	US 20020115760 A1	20020822	White, biaxially oriented, flame-retardant polyester film with cycloolefin copolymer, its use and process for its production

DERWENT-ACC-NO: 2002-364289  
DERWENT-WEEK: 200257  
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TITLE: Transparent biaxially oriented multi-layer polyester film useful for the packaging of food and food supplements, comprises thermoplastic polyester base layer, and at least one copolymer top layer coated with metallic or ceramic layer

INVENTOR: DAVIS, R L; HILKERT, G ; PEIFFER, H

PATENT-ASSIGNEE: MITSUBISHI POLYESTER FILM GMBH[MITU], HOECHST DIAFOIL GMBH[FARH], DAVIS R L[DAVII], HILKERT G[HILKI], PEIFFER H[PEIFI]

PRIORITY-DATA: 2000DE-1039367 (August 11, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1179419 A2	February 13, 2002	G	014	B32B 027/36
DE 10039367 A1	February 21, 2002	N/A	000	B32B 027/36
US 20020039646 A1	April 4, 2002	N/A	000	B32B 007/02
JP 2002120345 A	April 23, 2002	N/A	010	B32B 027/36
KR 2002013730 A	February 21, 2002	N/A	000	C08J 005/18

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK N L PT RO SE SI TR

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
EP 1179419A2	N/A	2001EP-0117783	August 2, 2001
DE 10039367A1	N/A	2000DE-1039367	August 11, 2000
US20020039646A 1	N/A	2001US-0922674	August 6, 2001
JP2002120345A	N/A	2001JP-0241067	August 8, 2001
KR2002013730A	N/A	2001KR-0047782	August 8, 2001

INT-CL (IPC): B29C047/06; B29C055/12; B29D007/01; B29K067/00; B32B007/02; B32B015/08; B32B018/00; B32B027/36; B65D065/40; C08J005/18; C08K007/16

ABSTRACTED-PUB-NO: EP 1179419A

BASIC-ABSTRACT: NOVELTY - A transparent biaxially oriented polyester film includes:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester; and

(2) at least one top layer A coated with a metallic or ceramic layer, and containing a copolymer or a mixture of homo- and copolymer, which contains 90-98 wt.% ethylene-2,6-naphthalate units and up to 10 wt.% ethylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

**DETAILED DESCRIPTION** - A transparent biaxially oriented polyester film includes:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester; and

(2) at least one top layer A containing a copolymer or a mixture of homo- and copolymer, which contains 90-98 wt.% ethylene-2,6-naphthalate units and up to 10 wt.% ethylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

The top layer A is coated with a metallic or ceramic layer, and A is more than 0.7 micron thick and is less than 25 wt.% of the whole film weight, and the T2 value of the film is higher than that of the polyester of the basic layer B but lower than that of polyester of top layer A.

An INDEPENDENT CLAIM is also included for preparation of the film involving coextrusion of the layers, stretching of the film, heat fixing of the stretched film, and deposition of the metal- or ceramic layer on the heat fixed film.

The film is stretched in the longitudinal direction at a 80-130 deg. C and in the transverse direction at 90-150 deg. C, at a longitudinal stretching ratio of 2.5:1 to 6:1, preferably 3:1 to 5.5:1, and a transverse stretching ratio of 3:1 to 5.5:1, preferably 3.5:1 to 4.5:1.

**USE** - The film is useful for the packaging of food and food supplements.

**ADVANTAGE** - The film has outstandingly good handling properties, outstanding barrier properties, especially towards oxygen, and excellent processing properties, especially in processing on high speed machines.

**ABSTRACTED-PUB-NO:** US20020039646A

**EQUIVALENT-ABSTRACTS:** NOVELTY - A transparent biaxially oriented polyester film includes:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester; and

(2) at least one top layer A coated with a metallic or ceramic layer, and containing a copolymer or a mixture of homo- and copolymer, which contains 90-98 wt.% ethylene-2,6-naphthalate units and up to 10 wt.% ethylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

**DETAILED DESCRIPTION** - A transparent biaxially oriented polyester film includes:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester; and



(2) at least one top layer A containing a copolymer or a mixture of homo- and copolymer, which contains 90-98 wt.% ethylene-2,6-naphthalate units and up to 10 wt.% thylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

The top layer A is coated with a metallic or ceramic layer, and A is more than 0.7 micron thick and is less than 25 wt.% of the whole film weight, and the T2 value of the film is higher than that of the polyester of the basic layer B but lower than that of polyester of top layer A.

An INDEPENDENT CLAIM is also included for preparation of the film involving coextrusion of the layers, stretching of the film, heat fixing of the stretched film, and deposition of the metal- or ceramic layer on the heat fixed film. The film is stretched in the longitudinal direction at a 80-130 deg. C and in the transverse direction at 90-150 deg. C, at a longitudinal stretching ratio of 2.5:1 to 6:1, preferably 3:1 to 5.5:1, and a transverse stretching ratio of 3:1 to 5.5:1, preferably 3.5:1 to 4.5:1.

USE - The film is useful for the packaging of food and food supplements.

ADVANTAGE - The film has outstandingly good handling properties, outstanding barrier properties, especially towards oxygen, and excellent processing properties, especially in processing on high speed machines.

CHOSEN-DRAWING: Dwg.0/0

**TITLE-TERMS:**

TRANSPARENT BIAXIAL ORIENT MULTI LAYER POLYESTER FILM USEFUL PACKAGE  
FOOD FOOD  
SUPPLEMENT COMPRISE THERMOPLASTIC POLYESTER BASE LAYER ONE  
COPOLYMER TOP LAYER  
COATING METALLIC CERAMIC LAYER

DERWENT-CLASS: A23 A92 P73 Q34

CPI-CODES: A05-E04E; A05-E05A; A11-B02A; A11-B02C; A11-B07A; A11-C04B1;  
A11-C04B2; A12-P01A; A12-S06C;

**ENHANCED-POLYMER-INDEXING:**

**Polymer Index [1.1]**

018 ; P0839\*R F41 D01 D63 ; H0317 ; S9999 S1285\*R

**Polymer Index [1.2]**

018 ; ND04 ; Q9999 Q7589\*R ; Q9999 Q8366\*R ; B9999 B5163 B5152 B4740  
; B9999 B4397 B4240 ; K9676\*R ; B9999 B3554\*R ; K9687 K9676 ; K9698  
K9676 ; K9701 K9676 ; K9574 K9483 ; B9999 B4842 B4831 B4740 ; ND07  
; N9999 N5981 N5970 ; N9999 N7090 N7034 N7023 ; N9999 N7147 N7034  
N7023 ; B9999 B5447 B5414 B5403 B5276 ; N9999 N5925 N5914 ; N9999  
N6199 N6177 ; B9999 B4897 B4740 ; B9999 B4864 B4853 B4740 ; B9999  
B5301 B5298 B5276 ; K9427 ; N9999 N7227 N7023 ; N9999 N6906

**Polymer Index [2.1]**

018 ; D11 D10 D20 D18 D32 D78 D50 D93 F90 F41 E22 E00 ; D11 D10  
D19 D18 D31 D76 D50 D90 F90 F41 E21 E00 ; G1025\*R G0997 D01 F28  
F26 D13\*R ; G1149\*R G1092 D01 D18 D76 F32 F30 ; G1343\*R G1310 G4024

DERWENT-ACC-NO: 1999-529953  
DERWENT-WEEK: 200239  
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TITLE: Transparent, biaxially oriented polyester film used as barrier film against water vapor, nitrogen, carbon dioxide, helium and flavors, e.g. for packaging food etc.

INVENTOR: BENNETT, C; CRASS, G ; HILKERT, G ; PEIFFER, H ; ROTH, W

PATENT-ASSIGNEE: HOECHST DIAFOIL GMBH[FARH], MITSUBISHI POLYESTER FILM GMBH[MITSN]

PRIORITY-DATA: 1998DE-1013268 (March 25, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 945259 A2	September 29, 1999	G	013	B32B 027/36
US 6391410 B1	May 21, 2002	N/A	000	B32B 027/36
DE 19813268 A1	September 30, 1999	N/A	000	B65D 065/40
JP 11314330 A	November 16, 1999	N/A	013	B32B 027/36
KR 99078207 A	October 25, 1999	N/A	000	B32B 027/36

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK N L PT RO SE SI

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
EP 945259A2	N/A	1999EP-0105342	March 16, 1999
US 6391410B1	N/A	1999US-0274777	March 24, 1999
DE 19813268A1	N/A	1998DE-1013268	March 25, 1998
JP 11314330A	N/A	1999JP-0075502	March 19, 1999
KR 99078207A	N/A	1999KR-0010013	March 24, 1999

INT-CL (IPC): B32B015/08; B32B027/08 ; B32B027/36 ; B65D065/40 ; C08J005/18 ; C08L067/02

ABSTRACTED-PUB-NO: EP 945259A

BASIC-ABSTRACT: NOVELTY - Transparent, biaxially oriented polyester film used as gas barrier film has a thermoplastic polyester base layer (B) and an outer layer of polymer (A) with ethylene 2,6-naphthalate (EN), ethylene terephthalate (ET) and optionally cycloaliphatic or aromatic diol and/or diacid units, and the film shows a G2 value above that of (B) but below that of (A).

DETAILED DESCRIPTION - The use of transparent, biaxially oriented polyester film as a barrier film against water vapor, nitrogen, carbon dioxide, helium and flavor substances is claimed. This film has a base layer (B) comprising at least 80 wt.% thermoplastic polyester and at least one outer layer (A)

comprising a polymer or mixture of polymers containing at least 40 wt.% EN units, up to 40 wt.% ET units and optionally up to 60 wt.% units derived from cycloaliphatic or aromatic diols and/or dicarboxylic acids. The Tg2 value of the film is above that of the base layer (B) and below that of outer layer (A).

USE - For the flavor-tight packaging of food and luxury foods, etc., and for the production of helium-filled balloons.

ADVANTAGE - Transparent, biaxially oriented polyester film with very good gas-barrier properties (10 times better than conventional polyester) and good physical properties in general. This film is made by a simple, economical process and gives rise to no disposal problems (unlike PVDC-containing film).

ABSTRACTED-PUB-NO: US 6391410B

EQUIVALENT-ABSTRACTS: NOVELTY - Transparent, biaxially oriented polyester film used as gas barrier film has a thermoplastic polyester base layer (B) and an outer layer of polymer (A) with ethylene 2,6-naphthalate (EN), ethylene terephthalate (ET) and optionally cycloaliphatic or aromatic diol and/or diacid units, and the film shows a Tg2 value above that of (B) but below that of (A).

DETAILED DESCRIPTION - The use of transparent, biaxially oriented polyester film as a barrier film against water vapor, nitrogen, carbon dioxide, helium and flavor substances is claimed. This film has a base layer (B) comprising at least 80 wt.% thermoplastic polyester and at least one outer layer (A) comprising a polymer or mixture of polymers containing at least 40 wt.% EN units, up to 40 wt.% ET units and optionally up to 60 wt.% units derived from cycloaliphatic or aromatic diols and/or dicarboxylic acids. The Tg2 value of the film is above that of the base layer (B) and below that of outer layer (A).

USE - For the flavor-tight packaging of food and luxury foods, etc., and for the production of helium-filled balloons.

ADVANTAGE - Transparent, biaxially oriented polyester film with very good gas-barrier properties (10 times better than conventional polyester) and good physical properties in general. This film is made by a simple, economical process and gives rise to no disposal problems (unlike PVDC-containing film).

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:

TRANSPARENT BIAxIAL ORIENT POLYESTER FILM BARRIER FILM WATER VAPOUR  
NITROGEN  
CARBON HELIUM FLAVOUR PACKAGE FOOD

DERWENT-CLASS: A23 A92 P73 Q34

CPI-CODES: A05-E04E; A05-E05A; A12-P01A;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; G1456\*R G1445 G4024 D01 D63 F41 F90 E00 D11 D10 D20 D18 D32  
D78 D50 D92 E22 ; G1456\*R G1445 G4024 D01 D63 F41 F90 E00 D11 D10  
D19 D18 D31 D50 D76 D90 E21 ; G0088\*R G0033 G0022 D01 D02 D13 D51

DERWENT-ACC-NO: 1999-582157  
DERWENT-WEEK: 200101  
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TITLE: Biaxially oriented clear polyester film useful for food packaging, can liner, covering film and thermal transfer ribbon

INVENTOR: BENNETT, C; CRASS, G ; HILKERT, G ; PFEIFFER, H ; ROTH, W ; PEIFFER, H

PATENT-ASSIGNEE: HOECHST DIAFOIL GMBH[FARH], MITSUBISHI POLYESTER FILM GMBH[MITSN]

PRIORITY-DATA: 1998DE-1013271 (March 25, 1998)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 945256 A2	September 29, 1999	G	013	B32B 027/36
US 6149995 A	November 21, 2000	N/A	000	B29D 022/00
DE 19813271 A1	September 30, 1999	N/A	000	C08L 067/02
JP 11309829 A	November 9, 1999	N/A	013	B32B 027/36
KR 99078205 A	October 25, 1999	N/A	000	B32B 027/36

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK N L PT RO SE SI

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
EP 945256A2	N/A	1999EP-0105339	March 16, 1999
US 6149995A	N/A	1999US-0275394	March 24, 1999
DE 19813271A1	N/A	1998DE-1013271	March 25, 1998
JP 11309829A	N/A	1999JP-0075500	March 19, 1999
KR 99078205A	N/A	1999KR-0010011	March 24, 1999

INT-CL (IPC): B29D007/01; B29D022/00; B32B005/16; B32B027/08; B32B027/20; B32B027/36; B41M005/26; B41M005/38; B41M005/40; B65D065/40; C08J005/18; C08J007/04; C08K003/36; C08L067/02; C09D167/02

ABSTRACTED-PUB-NO: EP 945256A

BASIC-ABSTRACT: NOVELTY - Biaxially oriented clear polyester film, with a base layer of not less than 80 wt.% thermoplastic polyester (I), has a top layer of polymer (mixture) containing not less than 5 wt.% ethylene-2,6-naphthalate units and at most 40 wt.% ethylene terephthalate units. The second glass transition temperature Tg2 of the polyester film is higher than that of (I) but below that of the top layer.

DETAILED DESCRIPTION - Biaxially oriented clear polyester film (A), with a base

layer of not less than 80 wt.% thermoplastic polyester (I), has a top layer of polymer (mixture) containing not less than 5 wt.% ethylene-2,6-naphthalate units and at most 40 wt.% ethylene terephthalate units and optionally at most 60 wt.% units of cycloaliphatic or aromatic diols and/or dicarboxylic acid. The second glass transition temperature Tg2 of the polyester film is higher than that of (I) but below that of the top layer. The base layer contains particles.

**INDEPENDENT CLAIMS** are also included for:

(a) a film (B) which is the same except that the content of ethylene-2,6-naphthalate units in the top layer is not less than 40 wt.% and the base layer contains particles, other than silica (SiO<sub>2</sub>) particles with a diameter of 4.5 microns; and

(b) the production of film (B).

**USE** - Film (B) is used for packaging food (claimed); and films (A) and (B) are used as can liners (claimed), covering films (claimed), e.g. covers for yogurt pots etc., and thermal transfer ribbons (claimed).

**ADVANTAGE** - Food packaging with a high barrier property usually consist of metallized polypropylene film, which is not transparent, or polypropylene film coated with polyvinylidene chloride (PVdC), both of which are costly, as they involve 2-stage production; or ethylene-vinyl alcohol copolymers, which are very sensitive to humidity and must be made relatively thick or laminated with other materials, as their mechanical properties are poor. They also cause dispersal problems. The present laminated films can be produced easily and economically, have the good physical properties of existing films and avoid disposal problems.

**ABSTRACTED-PUB-NO:** US 6149995A

**EQUIVALENT-ABSTRACTS:** **NOVELTY** - Biaxially oriented clear polyester film, with a base layer of not less than 80 wt.% thermoplastic polyester (I), has a top layer of polymer (mixture) containing not less than 5 wt.% ethylene-2,6-naphthalate units and at most 40 wt.% ethylene terephthalate units. The second glass transition temperature Tg2 of the polyester film is higher than that of (I) but below that of the top layer.

**DETAILED DESCRIPTION** - Biaxially oriented clear polyester film (A), with a base layer of not less than 80 wt.% thermoplastic polyester (I), has a top layer of polymer (mixture) containing not less than 5 wt.% ethylene-2,6-naphthalate units and at most 40 wt.% ethylene terephthalate units and optionally at most 60 wt.% units of cycloaliphatic or aromatic diols and/or dicarboxylic acid. The second glass transition temperature Tg2 of the polyester film is higher than that of (I) but below that of the top layer. The base layer contains particles.

**INDEPENDENT CLAIMS** are also included for:

(a) a film (B) which is the same except that the content of ethylene-2,6-naphthalate units in the top layer is not less than 40 wt.% and the base layer contains particles, other than silica (SiO<sub>2</sub>) particles with a

diameter of 4.5 microns; and

(b) the production of film (B).

USE - Film (B) is used for packaging food (claimed); and films (A) and (B) are used as can liners (claimed), covering films (claimed), e.g. covers for yogurt pots etc., and thermal transfer ribbons (claimed).

ADVANTAGE - Food packaging with a high barrier property usually consist of metallized polypropylene film, which is not transparent, or polypropylene film coated with polyvinylidene chloride (PVdC), both of which are costly, as they involve 2-stage production; or ethylene-vinyl alcohol copolymers, which are very sensitive to humidity and must be made relatively thick or laminated with other materials, as their mechanical properties are poor. They also cause dispersal problems. The present laminated films can be produced easily and economically, have the good physical properties of existing films and avoid disposal problems.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS:

BIAXIAL ORIENT CLEAR POLYESTER FILM USEFUL FOOD PACKAGE CAN LINING  
COVER FILM  
THERMAL TRANSFER RIBBON

DERWENT-CLASS: A23 A32 A60 A92 P73 P75 Q34 T04

CPI-CODES: A05-E01D3; A05-E05A; A08-R01; A09-A01A; A12-S06C1;

EPI-CODES: T04-G03B;

ENHANCED-POLYMER-INDEXING:

Polymer Index [1.1]

018 ; P0839\*R F41 D01 D63 ; S9999 S1285\*R ; H0317

Polymer Index [1.2]

018 ; P0884 P1978 P0839 H0293 F41 D01 D11 D10 D19 D18 D31 D50 D63  
D90 E21 E00 ; S9999 S1285\*R

Polymer Index [1.3]

018 ; ND01 ; ND10 ; B9999 B5163 B5152 B4740 ; B9999 B4397 B4240  
; K9847\*R K9790 ; Q9999 Q8366\*R ; Q9999 Q7589\*R ; Q9999 Q8457 Q8399  
Q8366 ; Q9999 Q7830 ; Q9999 Q8388 Q8366 ; Q9999 Q8195\*R Q8173 ;  
B9999 B4864 B4853 B4740 ; Q9999 Q7818\*R ; K9574 K9483 ; B9999 B3747\*R  
; B9999 B5492 B5403 B5276 ; K9427 ; B9999 B5618 B5572 ; K9687 K9676  
; K9698 K9676 ; K9712 K9676 ; N9999 N5981 N5970 ; K9676\*R ; B9999  
B4795 B4773 B4740 ; B9999 B3009 ; N9999 N5925 N5914 ; N9999 N6199  
N6177 ; B9999 B5163 B5152 B4740 ; B9999 B4897 B4740 ; B9999 B5243\*R  
B4740

Polymer Index [1.4]

018 ; B9999 B3678 B3554 ; N9999 N6326

Polymer Index [1.5]

018 ; R01694 D00 F20 O\* 6A Si 4A ; A999 A793 ; B9999 B5209 B5185  
B4740 ; S9999 S1456\*R

Polymer Index [2.1]

CLIPPEDIMAGE= JP411309829A

PAT-NO: JP411309829A

DOCUMENT-IDENTIFIER: JP 11309829 A

TITLE: OXYGEN GAS HIGH-BARRIER TRANSPARENT LAMINATED POLYESTER FILM,  
ITS USE,  
AND ITS PRODUCTION

PUBN-DATE: November 9, 1999

INVENTOR-INFORMATION:

NAME	COUNTRY
PFEIFFER, HERBERT DR	N/A
BENNETT, CYNTHIA DR	N/A
CRAS, GUENTER	N/A
HILKERT, GOTTFRIED	N/A
ROTH, WERNER DR	N/A

ASSIGNEE-INFORMATION:

NAME	COUNTRY
MITSUBISHI POLYESTER FILM GMBH	N/A

APPL-NO: JP11075500

APPL-DATE: March 19, 1999

INT-CL (IPC): B32B027/36;B41M005/40 ;B41M005/38

ABSTRACT:

**PROBLEM TO BE SOLVED:** To obtain a transparent biaxially oriented laminated polyester film which is simple and of low costs in its production process, has good properties, and is free from troubles in disposal.

**SOLUTION:** In an oxygen gas high-barrier transparent laminated polyester film comprising a base layer containing at least 80 wt.% of a thermoplastic polyester and at least one outer layer, the outer layer comprises a polymer comprises at least 40 wt.% of ethylene-2,6-naphthalate units, at most 40 wt.% of ethyleneterephthalate units, and at least 60 wt.% of units derived from an alicyclic diol and/or an aromatic dial and a dicarboxylic acid or its mixture, the second glass transition temperature (Tg2) of the laminated polyester film is higher than the Tg2 of the base layer and lower than the Tg2 of the outer layer, and the base layer contains particles.

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DERWENT-ACC-NO: 2002-364290  
DERWENT-WEEK: 200257  
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TITLE: Transparent biaxially oriented multi-layer polyester film useful for packaging of food and food supplements, includes base layer comprising thermoplastic polyester, intermediate layer(s), and top layer(s) containing a copolymer

INVENTOR: HILKERT, G; PEIFFER, H

PATENT-ASSIGNEE: MITSUBISHI POLYESTER FILM GMBH[MITU], HOECHST DIAFOIL GMBH[FARH], HILKERT G[HILKI], PEIFFER H[PEIFI]

PRIORITY-DATA: 2000DE-1039366 (August 11, 2000)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
EP 1179420 A2	February 13, 2002	G	000	B32B 027/36
DE 10039366 A1	February 21, 2002	N/A	000	B32B 027/36
JP 2002103547	April 9, 2002	N/A	011	B32B 027/36
A	March 28, 2002	N/A	000	B32B 015/08
US 20020037418 A1	February 21, 2002	N/A	000	B32B 027/36
KR 2002013731 A				

DESIGNATED-STATES: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK N L PT RO SE SI TR

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
EP 1179420A2	N/A	2001EP-0117784	August 2, 2001
DE 10039366A1	N/A	2000DE-1039366	August 11, 2000
JP2002103547A	N/A	2001JP-0241066	August 8, 2001
US20020037418A	N/A	2001US-0922615	August 6, 2001
1	N/A	2001KR-0047783	August 8, 2001
KR2002013731A			

INT-CL (IPC): B29C047/06; B29C055/12; B29D007/01; B29K067/00; B32B015/08; B32B018/00; B32B027/36; C08J005/18; C08K007/16

ABSTRACTED-PUB-NO: EP 1179420A

BASIC-ABSTRACT: NOVELTY - A transparent biaxially oriented polyester film comprises:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester;



(2) at least one intermediate layer Z; and

(3) at least one top layer A containing a copolymer or a mixture of homo- and copolymer, which contains specific units.

**DETAILED DESCRIPTION** - A transparent biaxially oriented polyester film comprises:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester;

(2) at least one intermediate layer Z; and

(3) at least one top layer A containing a copolymer or a mixture of homo- and copolymer, which contains 85 wt.% ethylene-2,6-naphthalate units and up to 15 wt.% ethylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

The intermediate layer Z, from a polymer or a mixture of polymers/copolymers, or copolymers comprises at least 3 wt.% of ethylene-2,6-naphthalate units and/or up to 97 wt.% ethylene terephthalate units from cycloaliphatic or aromatic diols and/or dicarboxylic acids, where the T<sub>2</sub> value of the film is higher than that of the polyester of the basic layer B but lower than that of polyester of top layer A.

An **INDEPENDENT CLAIM** is also included for a preparation of the film from base layer B, intermediate layer Z, and a top layer or layers involving coextrusion of the layers, stretching of the film, and heat fixing of the stretched film.

The film is stretched in the longitudinal direction at a 80-130 deg. C and in the transverse direction at 90-150 deg. C, at a longitudinal stretching ratio of 2.5:1 to 6:1, preferably 3:1 to 5.5:1, and a transverse stretching ratio of 3:1 to 5.5:1, preferably 3.5:1 to 4.5:1.

**USE** - The film is useful for the packaging of food and food supplements.

**ADVANTAGE** - The film has outstandingly good handling properties, and excellent processing properties, especially in processing on high speed machines.

**ABSTRACTED-PUB-NO:** US20020037418A

**EQUIVALENT-ABSTRACTS:** **NOVELTY** - A transparent biaxially oriented polyester film comprises:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester;

(2) at least one intermediate layer Z; and

(3) at least one top layer A containing a copolymer or a mixture of homo- and copolymer, which contains specific units.

**DETAILED DESCRIPTION** - A transparent biaxially oriented polyester film comprises:

(1) a base layer B comprising at least 80 wt.% thermoplastic polyester;

(2) at least one intermediate layer Z; and

(3) at least on top layer A containing a copolymer or a mixture of homo- and copolymer, which contains 85 wt.% ethylene-2,6-naphthalate units and up to 15 wt.% ethylene terephthalate units and/or units from cycloaliphatic or aromatic diols and/or dicarboxylic acids.

The intermediate layer Z, from a polymer or a mixture of polymers/copolymers, or copolymers comprises at least 3 wt.% of ethylene-2,6-naphthalate units and/or up to 97 wt.% ethylene terephthalate units from cycloaliphatic or aromatic diols and/or dicarboxylic acids, where the T2 value of the film is higher than that of the polyester of the basic layer B but lower than that of polyester of top layer A.

An INDEPENDENT CLAIM is also included for a preparation of the film from base layer B, intermediate layer Z, and a top layer or layers involving coextrusion of the layers, stretching of the film, and heat fixing of the stretched film.

The film is stretched in the longitudinal direction at a 80-130 deg. C and in the transverse direction at 90-150 deg. C, at a longitudinal stretching ratio of 2.5:1 to 6:1, preferably 3:1 to 5.5:1, and a transverse stretching ratio of 3:1 to 5.5:1, preferably 3.5:1 to 4.5:1.

USE - The film is useful for the packaging of food and food supplements.

ADVANTAGE - The film has outstandingly good handling properties, and excellent processing properties, especially in processing on high speed machines.

CHOSEN-DRAWING: Dwg.0/0

**TITLE-TERMS:**

TRANSPARENT BIAXIAL ORIENT MULTI LAYER POLYESTER FILM USEFUL PACKAGE  
FOOD FOOD

SUPPLEMENT BASE LAYER COMPRISE THERMOPLASTIC POLYESTER  
INTERMEDIATE LAYER TOP  
LAYER CONTAIN COPOLYMER

DERWENT-CLASS: A23 A92 P73

CPI-CODES: A05-E04E; A05-E05A; A11-B02A; A11-B02C; A11-B07A; A12-P01A;  
A12-S06C1;

**ENHANCED-POLYMER-INDEXING:**

Polymer Index [1.1]

018 ; P0839\*R F41 D01 D63 ; H0317 ; S9999 S1285\*R

Polymer Index [1.2]

018 ; ND04 ; Q9999 Q7589\*R ; Q9999 Q8366\*R ; B9999 B5163 B5152 B4740  
; B9999 B4397 B4240 ; K9676\*R ; B9999 B3554\*R ; K9687 K9676 ; K9698  
K9676 ; K9701 K9676 ; K9574 K9483 ; B9999 B4842 B4831 B4740 ; ND07  
; N9999 N5981 N5970 ; N9999 N7090 N7034 N7023 ; N9999 N7147 N7034  
N7023 ; B9999 B5447 B5414 B5403 B5276 ; N9999 N5925 N5914 ; N9999  
N6199 N6177 ; B9999 B4897 B4740 ; B9999 B4864 B4853 B4740 ; B9999  
B5301 B5298 B5276 ; K9427 ; N9999 N7227 N7023 ; N9999 N6906

Polymer Index [2.1]

	Document ID	Issu Date	Title
1	US 20020122932 A1	20020905	POLYESTER FILM WITH SURFACE TOPOGRAPHY MATCHED TO THE INTENDED USE, THE USE OF THE FILM AND PROCESS FOR ITS PRODUCTION
2	US 20020090498 A1	20020711	Transparent polyester film having a high oxygen barrier and process for its production
3	US 20020039646 A1	20020404	Biaxially oriented polyester film having a high oxygen barrier and process for its production

	Document ID	Issue Date	Title
4	US 20020037418 A1	20020328	Transparent polyester film having at least three layers and process for its production

L Number	Hits	Search Text	DB	Time stamp
1	3729	peiffer.in. or hilkert.in. or benn tt.in.	USPAT; US-PGPUB	2003/03/06 10:42
2	963	"tg2"	USPAT; US-PGPUB	2003/03/06 10:43
4	157	t?sub.g2	USPAT; US-PGPUB	2003/03/06 12:14
5	4	(peiffer.in. or hilkert.in. or bennett.in.) and ("tg2" or t?sub.g2)	USPAT; US-PGPUB	2003/03/06 12:51
6	15	(t?sub.g2).clm.	USPAT; US-PGPUB	2003/03/06 10:46
7	363	tg2	EPO; JPO; DERWENT	2003/03/06 12:17
8	4520	peiffer.in. or hilkert.in. or bennett.in.	EPO; JPO; DERWENT	2003/03/06 12:15
9	20	tg2 and (peiffer.in. or hilkert.in. or bennett.in.)	EPO; JPO; DERWENT	2003/03/06 12:17
10	237721	polyester	EPO; JPO; DERWENT	2003/03/06 12:17
11	34	tg2 and polyester	EPO; JPO; DERWENT	2003/03/06 12:18
12	0	ep-19813271-\$.did.	EPO; JPO; DERWENT	2003/03/06 12:19
13	1	de-19813271-\$.did.	EPO; JPO; DERWENT	2003/03/06 12:20
14	1	de-19813268-\$.did.	EPO; JPO; DERWENT	2003/03/06 12:20
15	1	de-10039367-\$.did.	EPO; JPO; DERWENT	2003/03/06 12:21
16	1	de-10039366-\$.did.	EPO; JPO; DERWENT	2003/03/06 12:21
17	41363	glass adj transition	USPAT; US-PGPUB	2003/03/06 12:52
18	31	(glass adj transition) and polyester.clm. and (peiffer.in. or hilkert.in. or bennett.in.)	USPAT; US-PGPUB	2003/03/06 12:52
19	92	(glass adj transition) same (base adj layer)	USPAT; US-PGPUB	2003/03/06 12:53
20	18	(peiffer.in. or hilkert.in. or bennett.in.) and ((glass adj transition) same (base adj layer)) and polyester.clm.	USPAT; US-PGPUB	2003/03/06 12:53